

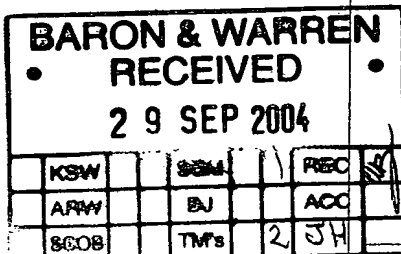
PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

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BARON & WARREN
19 South End, Kensington
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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year)

27.09.2004

Applicant's or agent's file reference
MR/38021

IMPORTANT NOTIFICATION

International application No.
PCT/GB 03/02787

International filing date (day/month/year)
27.06.2003

Priority date (day/month/year)
28.06.2002

Applicant
ALPHA THAMES LTD

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:



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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference MR/38021	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB 03/02787	International filing date (<i>day/month/year</i>) 27.06.2003	Priority date (<i>day/month/year</i>) 28.06.2002
International Patent Classification (IPC) or both national classification and IPC E21B43/12		
Applicant ALPHA THAMES LTD		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 26.01.2004	Date of completion of this report 27.09.2004
Name and mailing address of the international preliminary examining authority: <div style="display: flex; align-items: center;"> <div> European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016 </div> </div>	Authorized Officer van Berlo, A Telephone No. +31 70 340-3535



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/GB 03/02787**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-14 as originally filed

Claims, Numbers

1-12 filed with telefax on 09.08.2004

Drawings, Sheets

1/6-6/6 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/GB 03/02787

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1
	No: Claims	10,12
Inventive step (IS)	Yes: Claims	
	No: Claims	1,10,12
Industrial applicability (IA)	Yes: Claims	1,10,12
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1: WO 01 23705 A (HARDING RICHARD PATRICK ;WEATHERFORD LAMB (US))
5 April 2001 (2001-04-05)
D2: GB-A-2 317 406 (BAKER HUGHES INC) 25 March 1998 (1998-03-25)
D3: US-B-6 369 7181 (MATHIEU YVES M) 9 April 2002 (2002-04-09)

1.1 In light of the documents cited in the international search report it is considered that the invention as claimed in at least one of the independent claims does not appear to meet the criteria mentioned in Article 33 (1) PCT, i.e. does not appear to be novel.

Dependent claims can only meet the PCT requirements when related to independent claims complying with Article 33 (1) PCT.

1.2 The document D1 is regarded as being the closest prior art to the subject-matter of claim 10, and discloses, particularly in figure 1-3 and page 8 line 32 to page 17, line 31 (the references in parentheses applying to this document):

A system for controlling the operation of devices of a hydrocarbon production system, comprising:

- (a) connecting means for connecting two central controllers (12 in figure 1, 220 in figure 2) to two local controllers (16 in figure 1, 210 in figure 2), the central controllers being reprogrammable and the local controllers being configured to locally control the operation of at least one respective device, and control means (230) for remotely controlling the central controllers and transmitting means for transmitting data between the control means and the central controllers,
- (b) transmitting means for transmitting data between the central controllers and the local controllers in response to said central controllers receiving signals,
- (c) processing means for processing said transmitted data at the local controllers, and
- (d) transmitting means for transmitting data between the local controllers and its associated devices according to the processed data so as to locally control the operation of the devices.

The subject-matter of claim 10 is therefore not new (Article 33(2) PCT):

2.1 The document D1 is also regarded as being the closest prior art to the subject-matter of claim 1, and discloses, particularly in figure 1-3 and page 8 line 32 to page 17, line 31 (the references in parentheses applying to this document):

"A method for controlling the operation of devices of a hydrocarbon production system (12, 14, 16), comprising the steps of:

- (a) connecting one remote master controller (230) to two central controllers (12 in figure 1, 220 in figure 2) via a command/signal bus (connecting lines) and connecting two central controllers to two local controllers (16 in figure 1, 210 in figure 2), the central controllers being reprogrammable (optimization software) and the local controllers being configured to locally control the operation of at least one respective device,
- (b) transmitting data between the central controllers and the local controllers via the common data bus in response to said central controllers receiving signals,
- (c) processing said transmitted data at the local controllers, and
- (d) transmitting data between the local controllers and its associated devices according to the processed data so as to locally control the operation of the devices",

from which the subject matter of claim 1 differs in that the connection of at least two central controllers with at least one local controller occurs "via a common data bus".

The problem to be solved by the present invention may therefore be seen as connecting at least two central controllers with at least one local controller. A possible solution for this problem would be the solution for the problem of connecting one central controller to one local controller and another central controller to another local controller.

The use of a bus in common mode in a control communication network with a bus supervisor to control a node is known from D3. The use of a system according to D3 for each system 210 of D1 is trivial to the skilled man in the art and would result in a system 'connecting two central controllers to two local controllers via a common data bus', namely each central controller connecting via its own common data bus to one local controller. The solution proposed in amended claim 1 does therefore not involve an inventive step (Article 33(39 PCT). Claim 1 is therefore new but not inventive.

3. A computer program product as claimed in independent claim 12 is, based on the foregoing reasoning, also considered new, but not inventive.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB 03/02787

OTHER REMARKS:

- The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
- No documents reflecting the prior art, such as D1 and D2, are described on pages 1-3, is not identified in the description (Rule 5.1(a)(ii) PCT).

10/518170
DT01 Rec'd PCT/PTC 15 DEC 2004

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CLAIMS:

1. A method for controlling the operation of devices (61,62,63) of a hydrocarbon production system, comprising the steps of:-
- 5 (a) connecting at least one remote master controller (101) to at least two central controllers (100) via a command/signal bus (120) and connecting the at least two central controllers (100) to at least one local controller via a common data bus (130), the central controllers (100) being reprogrammable and the local controller(s) being configured to locally control the operation of at least one
- 10 respective device (61,62,63),
- (b) transmitting data between the central controllers (100) and the local controller(s) via the common data bus (130) in response to said central controllers (100) receiving signals,
- (c) processing said transmitted data at the local controller(s), and
- 15 (d) transmitting data between the local controller(s) and its associated device(s) (61,62,63) according to the processed data so as to locally control the operation of the device(s) (61,62,63).
2. The method as claimed in claim 1, wherein method step (b) includes
- 20 transmitting data between the central controllers (100) and the local controller(s) in response to said central controllers (100) receiving signals from any other central controller, and/or from the local controller(s).
3. The method as claimed in claim 1 or 2, including the step of transmitting
- 25 data between the master controller(s) (101) and the central controllers (100) so as to remotely monitor the central controllers.
4. The method as claimed in any preceding claim, including the steps of adding at least one device (64) and its associated local controller(s) to the
- 30 hydrocarbon production system, transmitting data between the remote master

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controller(s) (101) and the central controllers (100), and reprogramming the central controllers (100) to enable said newly added device(s) (64) and its local controller(s) to be used in the method.

5 5. The method as claimed in any preceding claim, including the steps of transmitting data between the remote master controller(s) (101) and the central controllers (100), and reprogramming the central controllers (100) to enable the central controllers (100) to control existing local controllers in a different manner.

10 6. The method as claimed in any preceding claim, including the step of feeding back data signals from the device(s) (61,62,63) to the local controller(s).

15 7. The method as claimed in any preceding claim, including the step of feeding back data signals from the local controller(s) to the central controllers (100).

20 8. The method as claimed in any preceding claim, wherein method step (d) includes controlling the device(s) (61,62,63) by at least activating or powering a sensor (62) and/or valve (63), and/or actuating a compressor, pump and/or actuator (61).

25 9. The method as claimed in any preceding claim, including the step of connecting the central controller (100) of one subsea control module (50a) to one or more central controllers (100) contained in one or more other subsea control modules (50b) in the same or another field development (170,180) via the command/signal bus (120), and wherein method step (b) comprises transmitting data between any of the central controllers (100) and any of the local controllers contained in a retrievable module (49a,49b) or a tree (30') of the same field development (170) via the common data bus (130).

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10. A system for controlling the operation of devices (61,62,63) of a hydrocarbon production system, comprising:-

(a) connecting means (130) for connecting at least two central controllers (100) to at least one local controller, the central controllers being reprogrammable and the local controller(s) being configured to locally control the operation of at least one respective device (61,62,63), and control means (101) for remotely controlling the central controllers (100) and transmitting means (120) for transmitting data between the control means (101) and the central controllers (100).

10 (b) transmitting means (130) for transmitting data between the central controllers (100) and the local controller(s) in response to said central controllers (100) receiving signals,

(c) processing means for processing said transmitted data at the local controller(s), and

15 (d) transmitting means for transmitting data between the local controller(s) and its associated device(s) (61,62,63) according to the processed data so as to locally control the operation of the device(s).

11. The system as claimed in claim 10, including means (130) for feeding back data signals from the device(s) (61,62,63) to the local controller(s) and from the local controller(s) to the central controllers (100).

12. A computer program product comprising program code means stored in a computer readable medium for performing a method according to any one of the method steps as claimed in any one of claims 1 to 9 when that product is run on a computer.